FARMING ON THE ROADSIDE

BARONESS HALL COURT
SOUTH PERTH
WA 6151

Farmers' Attitudes to Weeds and Weed Control

By

E.J. Roberts, G.J. Syme,
K.D. Williams and J.M. Hector

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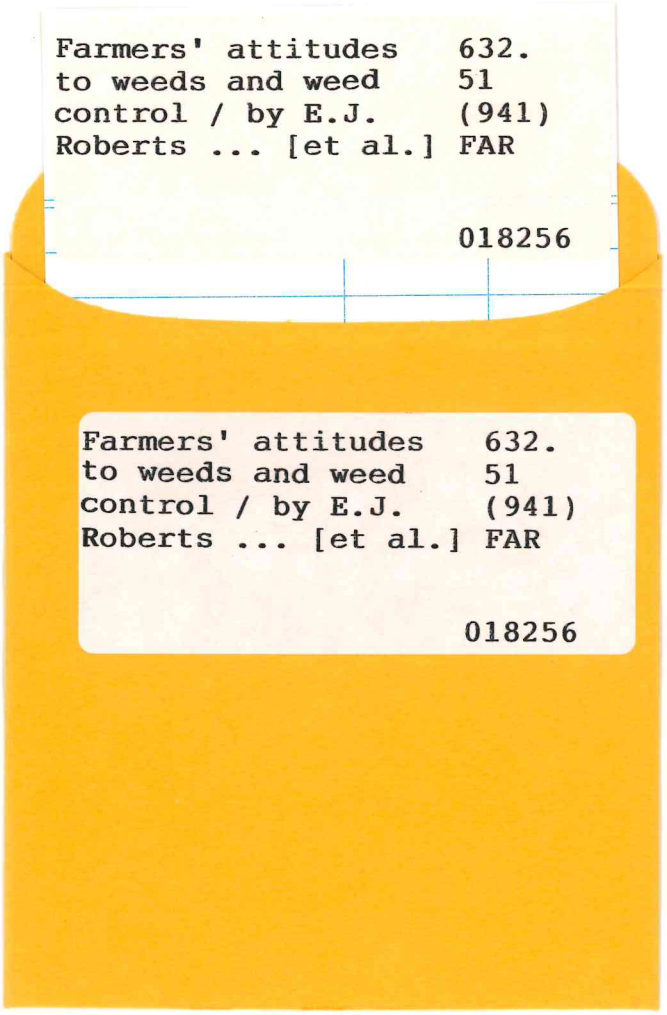

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SUMMARY

In order to obtain a greater understanding of farmers' attitudes towards the APB and weeds, a survey using around 300 farmers was conducted in 1987. It was designed to provide a basis for developing a contingent valuation questionnaire in stage two of the study and also to give the APB an understanding of how the farmers perceive their policies and operations.

Retired farmers were selected to conduct the interviews personally. Twenty landholders from fifteen shires, situated in the wheatbelt of Western Australia, were randomly selected to represent the total wheat farming population.

The results indicated that farmers do perceive weeds as a major problem and that they would be a greater worry in the absence of the APB. Most farmers did not seek advice regarding weeds from the APB and also seemed to have a limited understanding of the organization's functions. However despite this, they still felt the APB to be a reasonably effective organization.

The data collected from this survey is not only important for decision making within the APB but also for policy makers in weed control in the rest of Australia. It has also provided a sound basis of information for stage two of this study.

1. INTRODUCTION

In Western Australia the government body responsible for administering the Agriculture and Related Resources Protection Act (1976-1983), (ARRP Act), is the Agriculture Protection Board (APB). The APB assesses the threat, or potential threat, to the agricultural industry of certain weeds and other pests. Where necessary, the APB will declare a weed a declared plant under the Act. The declaration can be for the whole of the State, or for regions or districts. The declaration specifies a category or categories into which a plant is placed. These categories, which include eradication, prevention, control or containment, determine the level of APB activity with a particular weed.

The APB is responsible for the control of noxious weeds, vermin and grain storage pests in the State. Many of the APB's activities result from long standing practice and farmer pressure and suffer from insufficient justification from technical data. A lack of documentation and evaluation of these activities was the major motivation behind a programme, initiated in 1985, aimed at evaluating APB weed and pest control policies and programmes. This evaluation was to be conducted in both economic and social contexts using cost benefit analysis. The programme has concentrated on single pest and weed species and is currently on-going.

While there have been several studies on the economic value of the control of single pest species in pastoral and agricultural areas, this research has not included farmers' opinions on the matter and the significance of the APB's work to them. It was therefore decided to conduct surveys so that this information could be reported and compared with previous studies.

There are two stages involved in this project. Stage I was designed to address the following social and attitudinal issues:

1) comparative importance of, and beliefs about, weeds as a farm management problem;
2) farmers' perceptions of the impact of weeds, and their perceptions of weed control as a social versus individual problem;
3) farmers' private weed control practices and the costs of these practices;
4) farmers' attitudes towards services provided by private spraying contractors;

5) farmers' attitudes towards current public weed control practices;
6) farmers' attitudes towards, and use of the APB; and
7) farmers' use of public and private information sources.

Stage II of this study involved a more detailed survey of farmer attitudes towards weed control using a technique of non-market valuation known as contingent valuation. This technique allowed farmers to place hypothetical monetary valuations on such things as the services of the APB. The main study also resulted in the development of an economic model of weed control, which was used to examine important policy questions in the administration of public weed control such as the need for government intervention and who should bear the cost.

This discussion paper describes the results and discussion generated from Stage I of the project. Information regarding Stage II is presented in subsequent papers.

2. METHODOLOGY

2.1 Questionnaire Development

A 67 item, semi-structured questionnaire, including both scaled and open-ended responses was used in the survey. This permitted a large amount of systematic, quantitative data to be collected and at the same time gave respondents the freedom to choose the manner and content of a large proportion of their responses. The questionnaire was pretested during March 1987 on a sample of 47 landholders and was modified as a result of this process.

2.2 Sampling

To control sample variations due to the type and size of farming operations and different climatic conditions and soil types found throughout the Western Australian wheatbelt, geographical stratification based on APB zones 4, 7 and 8, was used in the sampling.

Five shires from each of zones 4, 7 and 8 were randomly selected, and in each shire every second property, working concentrically from two random starting points, was selected. Twenty landholders were selected from each shire for the survey (Table 2.1). Any properties owned or leased by state government departments, the Crown, or absentee owners were excluded from the sample.

Table 2.1 The Shires and Number of Respondents Involved in The APB Survey.

Zone 4	Total Respondents
Ravensthorpe	20
Kondinin	20
Dumbleyung	20
Wickepin	22
Corrigin	16
	98
Zone 7	
Northampton	20
Mullewa	20
Morawa	20
Dalwallinu	18
Dandaragan	20
	98

Zone 8

Koorda	20
Wyalkatchem	22
Westonia	19
Merredin	20
Beverley	20
	101

Total sample = 297

2.3 Interviews

Retired farmers, with some experience in survey work were selected and trained in the use of the questionnaire. Interviews were arranged by telephone and conducted on the property. On occasions when the landholder was not available, the interviewer "cold-called" on a neighbour, or arranged another interview while still in the Shire.

3. OBJECTIVES

The objective of Stage I was to elicit attitudinal, economic and demographic data regarding farmers' perceptions of weeds and public and private weed control practices. The aim was to provide both a basis for developing a contingent valuation questionnaire in Stage II of the study and the overall socio-economic evaluation. In Section 4.1 the degree to which farmers perceived weeds to be an important farm management problem was assessed.

Section 4.2 investigated the perceived difference between the impact of declared and undeclared weeds. For example, it could be established whether landholders' perceptions of a threatening weed was congruent with that of the APB. This enabled a comparison of landholders' perceptions of weeds threatening their farming activities, and weeds actually declared a threat to agriculture under the ARRP Act.

In Section 4.3 landholders' attitudes towards skeleton weed and the levy was examined. Landholders' attitudes towards the use of private spraying contractors as an alternative method for weed control was addressed in Section 4.4.

Section 4.5 examined landholders' awareness and knowledge of public weed control, including the process of declaring weeds. Of interest was the extent to which landholders were aware of the APB's Regional Advisory Committees, which were instituted as an important link between the landholder and the APB. In Section 4.6 landholders' attitudes towards the APB are discussed in terms of landholders' awareness of the APB at a local level, and the perceived effectiveness of the APB in controlling weeds.

Finally, the types of information regarding weed control, required by landholders, and also the sources to which they turn for specific information, are discussed in Section 4.7.

4. RESULTS AND DISCUSSION

4.1 Weeds as a Farm Management Problem

Initially it was felt desirable to obtain landholders' views about the most critical farm management problems facing them today. Ninety three per cent of the sample considered economic factors to be the most critical problem they faced. Responses indicated that "high interest rates", "high operating costs", "general inflation" and "low commodity returns", were of primary concern to farmers. A small proportion of farmers (4%) were concerned about lack of rainfall and an additional 3% mentioned other factors such as "the social aspect of the reducing farming population". Despite the economic crisis at the time of the survey, 97% said they would still like to be farming in five years, and 94% thought they would be farming in five years.

When landholders were asked directly how significant they perceived the weed problem to be compared to the economic problems they had mentioned, 80% believed weeds were a significant problem. Only 12% considered weeds as insignificant compared to other problems.

Landholders were also asked the extent to which they believed the farming community was concerned about the spread of weeds. Nearly all landholders (97%) said the farming community was concerned, but only 51% thought the non-farming community was concerned. Some landholders (22%) believed the wider community were ambivalent about the weed problem.

A small number of landholders (15%) did nothing to prevent the spread of weeds onto their property. In contrast, 34% of landholders deliberately purchased grain and feed from "clean" areas. An additional 22% of landholders used a combination of methods to prevent weed entry including the method mentioned above, as well as pre-cleaning equipment before use on the farm and checking the property regularly. While recognizing the value of these methods, many farmers felt they were impractical and so did not use them.

Over half the landholders surveyed (52%) expressed the view that it is the landowner's responsibility to prevent and control weed outbreaks on his property. A further 27% said it should be the APB's responsibility, and 18% said it should be the joint responsibility of the APB and the landholder.

On public land however, 62% of landholders believed the APB should be solely responsible for the control of weed outbreaks, and 12% said the Shire and the APB should be jointly responsible.

When asked specifically about outbreaks of declared weeds, 76% said it was the landholders' responsibility to control them on their properties. A further 12% thought it should be a joint APB/landholder responsibility, and 9% thought it should be solely the APB's responsibility.

Fifty four percent of landholders considered it was the APB's responsibility to control declared weeds on public land. A further 16% thought the Shire and APB should share the responsibility, while 10% believed the Shire alone should be responsible.

Forty five per cent of landholders indicated they would prefer to see the APB concentrating more on the prevention of new weeds entering their district and the State, than controlling weeds already in their district and the State.

4.2 Landholders' Perceptions of the Impact of Weeds

Landholders' beliefs about specific weed species are examined in this section, beginning with weed species that were thought to have a beneficial effect, followed by those weeds, landholders considered a threat to their farming activities.

4.2.1 Beneficial Weeds

Landholders were asked to name up to three weeds that they considered had a beneficial effect on their property. Most landholders (75%) named at least one beneficial weed, while 25% either could not name a beneficial weed or thought no weeds were beneficial. Capeweed (42%) and ryegrass (39%) were the weeds most frequently mentioned. Other weeds listed included barley grass, Paterson's Curse, bromegrass, clovers and medics, wild radish, lupins, wild oats, and wild geranium. With the exception of Paterson's Curse, none of the weeds mentioned are declared.

4.2.2 Threatening Weeds

Landholders were asked to name three weeds which they perceived as the greatest threat to their property. Their responses on a zonal basis are listed in Table 4.1.

Table 4.1 Weeds Considered by Farmers to Pose the Greatest Threat to Their Farming Activities, in Order of Frequency, by Zone.

		No. of Responses[1]
Zone 4		
1	Ryegrass	65
2	Doublegee[2]	34
3	Skeleton weed[2]	31
4	Wild Radish	30
Zone 7		
1	Doublegee	61
2	Ryegrass	53
3	Wild radish	47
4	Skeleton weed[2]	39
5	Brome grass	26
Zone 8		
1	Ryegrass	57
2	Doublegee	45
3	Wild Oats	43
4	Wild radish	40
5	Skeleton weed[2]	35

[1] This was a multiple response question hence number of responses can exceed sample number.

[2] Weed declared in this Zone.

Of all the weeds considered a threat by farmers, only Skeleton weed is declared in all three zones, while doublegee is declared in several shires in Zone 4.

Landholders were also asked to name up to three weeds, currently not declared, that they thought should be declared. Sixty per cent said there were none, while 18% named caltrop and just over 2% named doublegee.

With the assistance of local APB officers, a list of important declared and non-declared weeds found in each shire was compiled. Landholders were asked to rate each of the weeds on the list on a scale of 1 (being 'extremely beneficial') to 7 (being 'extremely detrimental'), in terms of the impact they have in crop, and in pasture. The results are shown in Table 4.2.

Table 4.2 Average Ratings for Weeds in Crop and in Pasture, Across Zones 4, 7 and 8.

Key:

1 = extremely beneficial
2 = quite beneficial
3 = slightly beneficial
4 = neither beneficial nor detrimental
5 = slightly detrimental
6 = quite detrimental
7 = extremely detrimental

	ZONE			ZONE		
	4	7	8	4	7	8
Weed	Crop	Crop	Crop	Pasture	Pasture	Pasture
Afghan thistle	5.8 (11)	6.0 (33)	5.7 (10)	6.5 (11)	6.6 (34)	6.0 (11)
Barley grass	5.9 (32)	5.7 (43)	5.6 (51)	3.3 (32)	3.4 (42)	2.7 (49)
Brome Grass	6.3 (20)	6.2 (49)	5.7 (48)	4.6 (20)	4.2 (49)	4.3 (46)
Caltrop	6.2 (39)	4.7 (14)	5.7 (23)	6.6 (38)	5.9 (16)	6.7 (24)
Cape Tulip	5.9 (49)	5.8 (19)	6.0 (50)	5.9 (37)	5.6 (19)	6.1 (50)
Capeweed	5.8 (94)	5.3 (73)	5.6 (55)	2.7 (94)	2.1 (54)	1.8 (54)
Dock	5.5 (30)	5.5 (2)	7.0 (2)	4.9 (30)	5.5 (2)	6.0 (2)
Doublegee	6.3 (80)	6.2 (91)	6.1 (100)	6.2 (80)	6.2 (91)	6.0 (98)
Heliotrope	4.9 (12)	4.6 (5)	6.0 (10)	5.4 (14)	4.6 (5)	6.3 (9)
Horehound	5.5 (10)	- -	6.0 (4)	5.7 (10)	- -	6.0 (4)
Mexican poppy	- -	- -	5.3 (6)	- -	- -	5.3 (6)
Mustard	5.4 (23)	5.7 (3)	5.7 (25)	3.8 (23)	4.3 (3)	3.9 (25)

Paddy melon	4.0	5.5	6.0	6.0	5.4	4.0
	(1)	(18)	(1)	(1)	(17)	(1)
Paterson's curse	6.2	5.4	5.7	5.3	5.5	5.0
	(31)	(64)	(69)	(32)	(46)	(68)
Prickly saltwort	-	5.8	4.0	-	5.6	5.0
	-	(12)	(1)	-	(11)	(1)
Ryegrass	6.3	6.3	6.1	2.8	2.8	2.5
	(94)	(88)	(92)	(94)	(88)	(90)
Saffron thistle	6.5	6.1	6.1	6.4	6.6	6.2
	(28)	(57)	(51)	(29)	(42)	(50)
Silver nightshade	5.2	-	-	6.0	-	-
		(5)	-	-	(7)	-
Skeleton weed	6.8	6.7	6.9	6.6	6.4	6.4
	(82)	(79)	(89)	(32)	(54)	(21)
Sorrel	6.1	-	6.3	5.2	-	5.4
	(60)	-	(13)	(58)	-	(12)
Soursob	6.0	5.8	6.3	5.9	5.7	5.9
	(65)	(26)	(51)	(53)	(26)	(51)
Spiney burrgrass	-	5.9	-	6.5	-	-
	-	(7)	-	(8)	-	-
Stemless thistle	5.3	-	-	5.3	-	-
	(16)	-	-	(16)	-	-
Variegated thistle	-	5.0	-	5.3	-	-
	-	(12)	-	(12)	-	-
Wild oats	6.2	6.3	6.1	3.1	3.4	2.9
	(36)	(54)	(90)	(36)	(54)	(65)
Wild radish	6.3	6.2	6.2	4.1	3.5	3.5
	(88)	(96)	(93)	(87)	(95)	(90)
Wild turnip	5.8	5.5	5.6	4.1	4.2	3.5
	(84)	(94)	(62)	(84)	(92)	(61)

In the next question respondents were asked if there were any declared weeds that they thought should be taken off the declared list. Seventy five per cent said there were none, and 12% (36) said they did not know. Five per cent of respondents mentioned Paterson's Curse.

4.3 Skeleton weed

Skeleton weed was mentioned earlier as receiving a good deal of attention by the APB. Of particular interest to the APB were landholders' attitudes towards the Skeleton

weed levy and Skeleton weed search programme. The Skeleton weed levy at the time of the survey was $42.50 per year for each grain producer delivering over 30 tonnes. An overwhelming 96% (283) of farmers considered it to be worthwhile, as illustrated in Table 4.3

Table 4.3 What do you think of the skeleton weed levy?

Zone	Extreme. Worthwhile	Quite	Slight.	Neither	Slight. Worthless	Quite	Extreme.
4	43	41	7	3	2	1	-
7	60	33	1	2	1	-	1
8	44	45	9	-	1	1	1
Total	147	119	17	5	4	2	2
% Of Total	49.7	40.2	57	1.7	1.4	0.7	0.7

When farmers were asked how they would feel about paying a higher levy, 25% said they were willing to pay double, 36% said they would pay a little more, while 24% would be unlikely to pay more.

The skeleton weed search programme is funded by the levy and is organized by the APB using APB equipment. Farmers provide voluntary labour for searching.

Of the landholders interviewed in Zone 4 only 2 had been on a skeleton weed search, compared with 53 and 51 in Zones 7 and 8 respectively. A possible reason for this outcome may be that in Zone 4 there have been four shires with known skeleton weed finds, whereas in Zone 7 there has been to date 12 skeleton weed infested shires and nine in Zone 8. Overall, 64% of farmers interviewed have been on a skeleton weed search, and 52% would probably consider going more often.

4.4 Landholders' Attitudes to Spraying Contractors

The aim of this section was to ascertain the extent to which landholders consider private spraying contractors an effective and efficient means of weed control. Most farmers (78%) did all or most of their own spraying, with relatively few (18%) relying on contractors for weed control. However, over half (55%) thought they would use contractors if it was necessary. The majority of landholders (84%) believed spraying contractors are well regarded.

Factors thought to affect landholders' use of private spraying contractors were:

- timeliness, that is, those farmers engaged in extensive cropping programmes who need to apply herbicides to large areas at a critical time, need to have contractors who can respond quickly to their needs for spraying;

- the number, and therefore the availability of spraying contractors in a district;

- the investment made by farmers in their own spraying equipment; and

- the reputation of private spraying contractors in the district.

4.5 Attitudes Towards Public Weed Control

4.5.1 The Process of Weed Declaration

Under the ARRP Act, weeds can be declared if they pose a threat to agriculture or related resources including the natural environment. The recommendation for a weed to be declared usually comes from a shire, a farmers' organization, or a Regional Advisory Committee, (through the Zone Control Authorities). This recommendation then goes to the Board, which may declare the weed under the ARRP Act.

When asked who they thought was responsible for having weeds declared, 42% of respondents thought it was the APB, 16% thought it was a combination of the APB and others, and 12% believed it was the Department of Agriculture. Less than 9% mentioned the Zone Control Authorities or other farmer organizations.

4.5.2 Perceived Effectiveness of Public Weed Control

The majority of landholders (56%) believed that the potential cost to the agricultural sector should be the main reason for a weed being declared. When asked how they felt about some weeds being declared and other weeds not, most landholders (59%) felt it was satisfactory the way it is, while a few (11%) were not satisfied and felt some important weeds were not declared.

Fifty three percent of landholders believed that once a weed is declared it should be eradicated or controlled, and an additional 29% expected control or eradication to be enforced. However, only 10% of the landholders interviewed said they had been made to spend money on controlling declared weeds, that they would not otherwise have spent. Most landholders (89%) agreed with the statement that "..the current system of declaring weeds is generally fair, as most of the weeds I think should be declared are declared..". It could be argued that farmers

are not likely to voice their dissatisfaction with the system if they are not aware of how it works or which weeds are declared. It can be concluded from the results that while farmers may not be aware of the mechanisms for declaring weeds, they are aware that the APB is involved at some stage.

Seventy eight percent of landholders believed that in the absence of the APB, there would be no change in the level of weed infestations on their property. **However, 72% of landholders believed that weed infestation levels on other properties in their district would increase if the APB ceased to exist.** Sixty four percent of respondents believed that no more than six properties in their district would let their weed control decline in the absence of the APB. Two thirds of farmers did not believe these would be absentee owners or hobby farmers, but instead believed they would be career farmers.

4.6 Farmers' Attitudes Towards and Use of the APB

4.6.1 Contact with the APB

Before investigating farmers' attitudes towards the APB, it was thought appropriate to identify the extent of knowledge of the organization, and the amount of contact landholders have had with the APB at a local level. It would then be possible to ascertain the extent to which their comments and attitudes were based on their own experiences.

Landholders were asked to name their local district officer (DO) as it was felt that this would indicate some level of awareness of, and contact with the APB at a district level. It is acknowledged however, that several other factors could also influence the landholder's response. As can be seen in Table 4.4, 63% of respondents were able to correctly name their local DO, 25% were incorrect, while 12% had forgotten. It was noticeable that a much lower percentage (44%) of respondents in Zone 7 were correct.

Table 4.4 Could You Name Your Local District Officer?

Zone	Yes, Correct	No, Don't Know	Yes, but forgot name
4	72	0	12
7	44	1	10
8	70	1	12
Total	186	2	34
%	(63%)	(0.7%)	(12%)

4.6.2 Frequency of Visits

Table 4.5 shows the frequency of visits by a DO to the properties in the survey since August 1985. The majority of landholders (64%) had received between one and three visits, while 19% had been visited between four and six times.

Table 4.5 Actual Visits by a District Officer to Farmers' Properties Since August 1985.

Zone	None	1-3 times	4-6 times	7-9 times	10+ times	Total Visits
4	8	67	15	5	3	90
7	4	67	19	2	5	93
8	6	54	21	16	4	95
Total	18	188	55	23	12	278
%	(6%)	(64%)	(19%)	(8%)	(4%)	

4.6.3 Nature of the Visit

Weevils and rabbits, followed by weeds were the main purpose of the visits. Seventy two percent of the contacts were initiated by the APB DO. Ninety two percent of respondents reported some degree of satisfaction with the visit.

4.6.4 Regional Advisory Committees

Eighty four percent of landholders had had no contact with the Regional Advisory Committee (RAC), or did not even know of them. Most of the landholders who had had some contact or knowledge of a RAC, were either former or present committee members.

4.6.5 Attitudes Towards Services Provided by the APB.

Seventy six percent of landholders saw the APB as generally well-regarded in their district, with each zone having very similar ratings.

Opinions were divided as the perceived effectiveness of the APB. Fifty one percent of landholders saw the APB as reasonably effective in preventing and controlling weeds on their property. However 34% believed the APB was neither effective nor ineffective, as they were the ones responsible for weed control on their properties. At a district level about 84% of landholders saw the APB as effective, while at the State level the APB was perceived as being effective in preventing and controlling weeds by 82% of respondents.

Understandably some landholders found the effectiveness of the APB hard to evaluate specifically and comments included:

"They have to be doing something so I guess they're quite effective."

"Skeleton weed is still spreading so I don't know if they are effective".

When asked how the APB could improve the services it provides to landholders, 26% of landholders mentioned better public relations. A further 22% said they were progressing steadily and there were no improvements that could be made, and 12% suggested the APB needed more staff.

The most valuable services provided by the APB, according to respondents, are presented in Table 4.6.

Table 4.6 The APB Services Most Valued by the Farmers

	ZONE			
	4	7	8	Total
Weed control and inspections	22	13	17	52 (18%)
Weevil control and inspections	21	13	15	49 (17%)
Rabbit control and inspections	12	12	22	46 (16%)
Skeleton Weed Programme	10	23	10	43 (15%)

It is interesting to note that in Zone 7 there was over double the number of landholders to Zones 4 and 8 who placed most value on the Skeleton Weed programme. This may be due to Zone 7 having more shires with known skeleton weed finds.

Landholders' concern about skeleton weed in Zone 7 is also highlighted in Table 4.7. It must be noted that as this question was open-ended many different responses regarding APB DO priorities could be obtained. Therefore presented in Table 4.7, are the most popular answers.

Table 4.7 "If a DO was Employed by a Group of Farmers in Your District, Including Yourself, What Would You Make His First Priority?"

	ZONE 4	7	8	Total *
Weed control generally	18	21	21	60 (21%)
Weevil control	17	10	15	42 (15%)
Rabbit control	11	9	16	36 (13%)
Skeleton weed	3	16	6	25 (9%)

* No totals are given as this was a multiple response question.

As the APB shares offices with the Department of Agriculture in several shires, it was thought there may be some confusion in landholders' minds about which department is providing which services. Therefore respondents were asked whether they were aware of the differences in services between those provided by the APB and those provided by the Department of Agriculture. Table 4.8 shows that the majority of landholders were able to differentiate between the services of the two organizations.

Table 4.8 Number of Farmers Who Could Correctly Differentiate Between Services Provided by the APB and Those Provided by the Department of Agriculture.

	ZONE 4	7	8	Total
No difference	2	3	3	8 (3%)
Yes, correct answer	82	75	82	239 (83%)
Incorrect response	9	10	8	27 (9%)
Don't know	3	6	4	13 (5%)
Missing				10
				297 (100%)

Landholders believed the most valuable services provided by the Department of Agriculture were research (40%) and information and advice (39%). When asked "how often in the last year had you used the Department of Agriculture service?" , 26% of landholders said 1 or 2 times, and 22% said 3 or 4 times. If a service was not provided by the Department of Agriculture 18% of landholders said they would use consultants, while 32% said they would use a combination of chemical companies, consultants, and other farmers.

4.7 Farmers' Use of Public and Private Information Sources

Not only is it important to know which services provided by the APB are perceived as most valuable to landholders it is also important to know the extent to which farmers used the APB as a source of information about weeds.

Table 4.9 shows who landholders had approached for information about weeds in the last two years. They were asked to name up to three sources of information they had used, hence the total frequency of responses was more than the sample size.

Table 4.9 Sources of Information About Weeds, Approached by Farmers in the Last Two Years.

	Frequency	Proportions*
Agriculture Department	210	32%
Chemical representatives	114	18%
APB	86	13%
Private consultant	62	10%
Other farmers	56	9%
No-one	15	2%
Other	108	17%
Total of multiple responses	651	

* Does not total 100% due to rounding error.

The main types of information sought by farmers were regarding spraying technology, (e.g., timing of application, rates of chemical etc) information on weed control (e.g. what control measures to use) and weed identification. The majority of farmers appeared to be generally satisfied with the information they were getting from these sources.

When asked what sort of information about weeds they thought should be provided but was not, 44% of respondents said there was nothing. Twenty six percent of respondents said they would like more information on spraying rates, and 11% thought information about weeds that could become a problem would be useful.

These results indicated farmers were generally happy with the responses to their queries about weeds, and did not feel that much more information could be provided. However it may be difficult, in an interview situation, to think specifically about types of information that might be useful, and types of information that could possibly be made available.

CONCLUSION

It is apparent that farmers do perceive the weed problem as a significant one and would be concerned about weed outbreaks in their district in the absence of the APB. It is also evident that by and large the APB is seen as a reasonably effective organization which has focused its attention on appropriate activities. Nevertheless, there seems to be a very limited understanding as to how the APB functions and a reasonably high percentage of farmers who did not know the name of their local APB officer.

This survey also highlights the appreciation by farmers that private contractors can be efficient. As well it shows that much information about weeds is also gained from sources other than the APB. In the later stages of the study, respondents were asked to differentiate between the services of the APB and those of the Department of Agriculture. A large number were able to do this well. Compared to those who had asked the APB for advice on weeds, twice as many respondents had sought the information from the Department of Agriculture.

The data collected from this survey has therefore provided the APB with some valuable information for their decision making with regard to specific declared pests and farmers. It has also provided a significant basis for the second study concerning contingent valuation and farmers' attitudes to the APB. While this study has immediate relevance for the APB, the results will also be of significance to policy makers in weed control throughout Australia.